

**Notice of Allowability**

Application No.

10/627,143

Examiner

SUSAN HANLEY

Applicant(s)

SPECTOR ET AL.

Art Unit

1651

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 6/18/2010.
2. ☒ The allowed claim(s) is/are 27-32,34 and 35.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of the:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.  
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached  
1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.  
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.  
Identifying Indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date 20100617.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Stephen Hunnius on 6/18/2010.

The application has been amended as follows:

#### IN THE CLAIMS:

Claims 1-26, 33, 36 and 37 were canceled.

Claims 27-31 were replaced by the following:

-- Claim 27 A method for assaying biomolecules wherein said assay is selected from the group consisting of a fluorescence assay, a radioactive assay, a magnetic assay and an optical assay, comprising the steps of:

- (A) functionalizing a support with acrylate groups;
- (B) forming a polyacrylate hydrogel by reacting a 6-acryloyl-beta-O-methyl monosaccharide with a crosslinker with two or more polymerizable double bonds, and 2-acrylamido hydroxyacetic acid,
- (C) reacting said polyacrylate hydrogel with said acrylate groups of said support to form a polyacrylate hydrogel linked to a support,

(D) reacting said biomolecule to be assayed with a second crosslinker and said polyacrylate hydrogel thereby forming a covalent bond between said biomolecule and said second crosslinker and a covalent bond between said second crosslinker and said polyacrylate hydrogel linked to said support, and  
(E) assaying said covalently bonded biomolecule.

Claim 28 The method of claim 27, wherein said biomolecule is a DNA.

Claim 29 The method of claim 28, wherein said DNA comprises up to 100,000 nucleotide base units.

Claim 30 The method according to claim 27, wherein said polyacrylate hydrogel is a network and said polyacrylate hydrogel has a pore size of 0.1 - 10  $\mu$ .

Claim 31 The method according to claim 30, wherein the polyacrylate is a three-dimensional, macroporous substrate used for the immobilization of oligonucleotides, peptides and proteins. --

Claim 35 was replaced by the following:

-- Claim 35 The method according to claim 27 wherein said biomolecule comprises a fluorophore group. --

IN THE ABSTRACT:

The abstract was replaced by the following:

-- The use of sugar-containing hydrogels as very highly porous, aqueous support material for the immobilization of oligonucleotides, peptides, proteins, antigens,

antibodies, polysaccharides, and other biomolecules for sensor applications. Unusually large sizes of interconnected pores allow large target molecules to pass rapidly into and through the gel and bind to immobilized biomolecules. Sugar-containing hydrogels have extremely low non-specific absorption of labeled target molecules, providing low background levels. Some hydrogel materials do not have this type of homogeneous interconnected macroporosity, thus large target molecules cannot readily diffuse through them. Additionally, they nearly always experience non-specific absorption of labeled target molecules, limiting their usefulness in sensor applications. A method is provided for preparing sugar polyacrylate hydrogels with functional chemical groups which covalently bond oligonucleotides and peptides. A method for copolymerizing acrylate-terminated oligonucleotides with sugar acrylate monomers and diacrylate cross-linking agents is also provided. --

The following is an examiner's statement of reasons for allowance: The closest prior art is Boschetti et al. (US 20030218130) and Martin et al. (1992; cited in the IDS filed 7/25/2003). Boschetti et al. teach an acrylated dextran hydrogel that is cross-linked and bonded to a binding group wherein the hydrogel is anchored to a support. The acrylate groups serve to crosslink the dextran together as well as to bind them to the support. A further crosslinker can be reacted with the hydrogel as well. A biomolecule is attached to the binding group and the biomolecule-supported hydrogel is used for assays such as mass spectroscopy. Martin et al. teach the polymerization of methyl 6-acryloyl-beta-galactoside to make a linear polyacrylate having pendant monosaccharide groups. The hydrogels can be used for biomedical and membrane

applications. There is no teaching or suggestion in the prior art that would motivate the ordinary artisan to substitute a hydrogel having a linear polyacrylate with pendant monosaccharides for a hydrogel comprising a cross-linked dextran which is a polysaccharide.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUSAN HANLEY whose telephone number is (571)272-2508. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Susan Hanley/  
Examiner, Art Unit 1651

/Irene Marx/  
Primary Examiner  
Art Unit 1651